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March 7, 2003

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, D.C. 20554

Re: *RM-10403*

Dear Ms. Dortch:

On behalf of WaveRider Communications, Inc. ("WaveRider"), a leading global provider of high-speed Internet access products for license-exempt broadband service in the 902-928 MHz band, I am writing to report on recent industry developments that reaffirm why the Commission must not disrupt the existing regulatory framework for Part 15 operations at 902-928 MHz. This letter also addresses certain serious flaws in the White Paper submitted by the proponent of this proceeding, Progeny LMS, LLC ("Progeny").[1]

By now it is clear that license-exempt broadband service will play an essential role in the Commission's ongoing effort to speed broadband deployment, particularly in less densely populated areas of the country.[2] The growth of the license-exempt broadband industry confirms

[1] *See* "LMS Compatibility with Part 15 Devices: The Case for Spectrum Flexibility," submitted as an attachment to Letter from Albert Halprin, Esq., Counsel for Progeny LMS, LLC, RM-10403 (filed Oct. 10, 2002) (hereinafter referred to as the "White Paper"). WaveRider's stake in this proceeding is a matter of public record and thus will not be reiterated in detail here. *See, e.g.*, Comments of WaveRider Communications, Inc., RM-10403 (filed May 14, 2002); *Ex Parte* Letter from Robert D. Primosch, Esq., Counsel for WaveRider Communications, Inc., RM-10403 (Sept. 26, 2002).

[2] *See, e.g.,* Federal Communications Commission Spectrum Policy Task Force Report, Report of the Unlicensed Devices and Experimental Licenses Working Group, at 15 (Nov. 15, 2002) ("[T]he [Working Group] believes that promoting broadband to rural America is an important Commission objective and that this objective may be furthered through permitting the use of higher-powered unlicensed operations in rural areas. Allowing higher power limits in rural areas for WISPs may be a promising approach to speeding the rural growth of broadband."); *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 – Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services (Seventh Report)*, 17 FCC Rcd

as much – according to a recent Cahners In-Stat report, approximately 1,500-1,800 wireless Internet service providers ("WISPs") already are providing license-exempt broadband service to approximately 591,000 subscribers in the U.S., with subscribership expected to double by the end of 2003.[3] Part 15 use of the 902-928 MHz band will continue to drive that growth, due to the favorable propagation characteristics of spectrum below 1 GHz. Indeed, WaveRider's wireless broadband systems for the 902-928 MHz band, known as the LMS4000 (Last Mile Solution®), have been deployed by service providers in 43 states, bringing wireless broadband service to hundreds of thousands of potential subscribers across the country. To cite just a few recent examples:

- ***Suburban Broadband LLC*** (www.suburbanbroadband.com) has announced that it will deploy WaveRider's equipment to bring broadband service to 14 counties along the Front Range of Colorado, representing more than 80% of the state's population. Suburban originally launched its wireless broadband service with WaveRider equipment in Castle Pines, Colorado, and is already serving hundreds of subscribers.[4]

- ***Municipal Wireless*** (www.municipalwireless.com), in cooperation with the Kentucky League of Cities, has embarked on a program to deliver license-exempt broadband service in the 902-928 MHz band to rural communities throughout the State, using WaveRider's equipment. The company was the first to launch broadband service in Campbellsville, KY, and more communities will have the service available to them in 2003.

- The city of ***Ellaville, Georgia*** (www.epride.net) now offers license-exempt broadband service in the 902-928 MHz band via WaveRider equipment. The city's system uses three transmitting antennas mounted on the city's main water tank, and permits access at speeds exceeding 300 Kbps at a distance of over two miles.[5] Also,

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12985, 13074-75 (2002) ("Several smaller fixed wireless carriers, including hundreds of operators using unlicensed spectrum, continue to provide high-speed Internet access service, generally in less densely populated markets across the country . . . . Many fixed wireless operators use lowerband spectrum to offer high-speed Internet access in rural and underserved areas. . . In fact, at least one industry analyst claims that, while fixed wireless has the potential to compete with DSL and cable modem service, the technology is best-suited for rural and underserved markets where these services may not be available.").

[3] *See* http://www.wcai.com/pdf/2003/p_instatmdrJan22.pdf. Moreover, according to a recent survey by the License-Exempt Alliance, investments in WISPs during 2002 exceeded $445 million in the U.S. alone. *See* Goldman, "VCs Love WISPs," http://www.thefeature.com (Dec. 19, 2002).

[4] Further information about deployments of WaveRider's 900 MHz equipment for license-exempt broadband service is available at www.waverider.com.

[5] *See* Mackie, "City in Southwestern Georgia Deploys WaveRider's System," *Broadband Wireless Online* (July 3, 2002); Blackwell, "Small Cities Serve Their Own," www.isp-planet.com (June 25, 2002).

WaveRider equipment is being used to support a high-speed wireless network in Fort Valley, Georgia through a project called ***GeorgiaSpeed.Net*** (www.georgiaspeed.net). The network will bring symmetrical Internet access speeds of up to 1.5 Mbps to Fort Valley and Peach County area businesses and residents.[6]

- ***Joink*** (www.joink.com) provides broadband service in the 902-928 MHz band to rural communities in western Indiana and eastern Illinois. The company has already launched the service with WaveRider equipment in eight communities, with plans to add 30 more throughout its region. Joink delivers its service through a network of Authorized Dealers, who provide customers with a local storefront through which they may obtain and pay for service. In addition, Joink has a Broadband Community Alliance program that permits a community leader to bring Joink's service to a small or underserved area.[7]

- ***REA-ALP*** (home.alexweb.net) is a utility cooperative in Alexandria, Minnesota serving approximately 7,000 customers. Using equipment supplied by Alvarion and WaveRider, it currently provides license-exempt broadband service in the 2.4 GHz and 902-928 MHz bands, competing with eight ISPs plus local cable modem and DSL service. REA-ALP deployed WaveRider's equipment to address coverage difficulties created by a 40 to 60 foot tree canopy and many lakes in and around Alexandria, all of which have limited the availability of the company's 2.4 GHz broadband service. REA-ALP is now able to provide reliable non-line of sight service at distances up to 1.5 miles, and reliable line of sight service at distances up to 4.7 miles.[8]

- The city of ***Buffalo, Minnesota***, (www.bwig.net), a community of 10,000 people located 26 miles southwest of Minneapolis-St. Paul, is one of the first municipal governments in North America to construct and operate its own high-speed wireless network using WaveRider's equipment. The city government took this step after being informed by Qwest and the local cable operator that neither planned to deploy broadband services in Buffalo. The community's response has been very positive -- WaveRider's network already supports hundreds of users, with more subscribers added each week.

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[6] *See* http://isp-planet.com/fixed_wireless/wi-fi_briefs/2002/021107.html.

[7] *See* http://www.waverider.com/en/news/releases/release.cfm?id=113. Also, Infobahn Outfitters is using WaveRider equipment to provide license-exempt broadband service in and around Macomb, Illinois. InfoBahn is the first company to bring broadband services to businesses and residents in Macomb. *See* http://www.waverider.com/en/news/releases/release.cfm??id=199.

[8] *See* Sanders, "Hybridized 900 MHz NLOS Systems," *Broadband Wireless Business*, at 20 (July/August 2002).

The proof, in other words, is undeniable: the 902-928 MHz band is emerging as a critical tool for delivering broadband service to rural and other non-urban areas that have little or no such service available to them. Moreover, there continues to be no evidence that Part 15 and licensed operations cannot coexist at 902-928 MHz under the Commission's current rules. In fact, Progeny itself has acknowledged that "the vast majority of Part 15 devices do not represent an interference problem to LMS operations."[9] It must also be emphasized that Progeny and other Location and Monitoring Service ("LMS") licensees *bought their spectrum with full knowledge that (1) Part 15 operations were permitted in the 902-928 MHz band and (2) the Commission had adopted a "safe harbor" rule for the 902-928 MHz band to clarify what constitutes "harmful interference" from Part 15 devices.* All said, Progeny's rulemaking proposal is little more than a transparent attempt to shift the blame for Progeny's shipwrecked business model to the license-exempt community. As such, the proposal falls well short of the showing necessary to support the relief Progeny has requested here -- as courts have held time and again, the Communications Act "requires the Commission to promote the public interest, not to protect individual licensees."[10]

Progeny's White Paper gives the Commission no reason to conclude otherwise. WaveRider has identified the following flaws in Progeny's technical analysis:

1. Unsupported statements regarding the nature of the LMS services and their impact on Part 15 devices.

Section 2.1 of the White Paper appears to suggest that LMS services will be limited in type and that signal transmissions for those services will be intermittent, or "bursty."[11] The examples cited in Section 2.1 are the types of services that would be expected under and supported by the existing LMS rules. It is clear, however, that flexible use is the centerpiece of Progeny's proposal, and that Progeny filed its Petition for Rulemaking in the hope that the Commission would liberalize the service limitations in the current LMS rules.[12] This, of course, is difficult to reconcile with the White Paper's apparent suggestion that LMS services may be limited in scope.

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[9] *See* Petition for Rulemaking filed by Progeny LMS, LLC, RM-10403, at 28 (filed Mar. 5, 2002) ("Progeny Petition").

[10] *National Ass'n of Broadcasters v. FCC*, 740 F.2d 1190, 1212 (D.C. Cir. 1984) (citation omitted).

[11] *See* White Paper at 2 ("LMS systems will likely deploy packet data networks to provide LMS services. Such LMS services may include tracking vehicles, equipment, inventory and packages for business, public safety and personal applications. These LMS services will involve 'bursty' data transmissions.").

[12] *See, e.g.,* Progeny Petition at iii ("Progeny asks the Commission to apply to the LMS band its market-oriented policy of allowing licensees flexibility to offer whatever services the market can support and demand . . . ."); *id.* at 26 ("[T]here is no longer any good reason (if ever there was one) to restrict the services or types of communications that an LMS licensee can offer.").

In addition, even if the Commission were to accept the premise that LMS transmissions will be "bursty," aggregate utilization of LMS spectrum will be quite high under Progeny's technical analysis (since it assumes many users), and thus the overall interference effect will not be bursty. Also, even in a lightly loaded LMS system, there is no reason to assume that the signaling protocol between the base station and the remote stations would be bursty – for example, any polling type system has the potential to provide a continuous RF transmission even if no traffic is being carried.

Finally, Progeny's technical analysis is grounded in the fact that LMS spectrum "only" occupies about half of the 902-928 MHz band.[13] It is well-established, however, that Part 15 systems have the flexibility to operate in all portions of the band, and thus the fact that LMS occupies only some of the spectrum does not cure the interference problem.

2. Faulty assumptions regarding the technical parameters of LMS systems.

The White Paper states that "[t]he network parameters - and their nominal values as established in this paper - are intended to provide a framework for assessing both the performance and potential interference risks associated with a general purpose, flexible LMS network."[14] This statement does not appear to be accurate with regard to WaveRider -- although the White Paper assesses interference from LMS systems into Part 15 operations, WaveRider can find no corresponding assessment of how the proposed LMS network parameters will affect the performance of WaveRider's LMS4000 system.

Furthermore, the White Paper appears to take no account of the fact that LMS network parameters for minimizing interference may not be the same as those for optimizing LMS system performance, particularly in a flexible use environment. For example, WaveRider questions Progeny's assumption that LMS systems will use a 16 dBi base station antenna.[15] WaveRider knows of at least one antenna manufacturer who recommends against the use of 16 dBi antennas for wide area point-to-multipoint systems, due the difficulty of ensuring proper alignment in those types of networks. Since Progeny's selection of antenna bears directly on the validity of its interference analysis, any uncertainty on this point necessarily undermines Progeny's conclusions as to the impact of its proposed rule changes on Part 15 operation.

Finally, the White Paper does not discuss the LMS equipment characteristics required to accommodate flexible use or, in Progeny's words, "whatever services the market can support and

[13] *See* White Paper at 7.

[14] *See id.* at 1.

[15] *See id.* at 2.

demand."[16] Instead the White Paper assumes, among other things, an LMS receiver threshold of -105 dBm, which would imply a signaling bandwidth of less than 200 kHz.[17] Again, this assumption bears directly on the validity of Progeny's technical analysis: if LMS operators were to subsequently determine that the marketplace demands wider bandwidth, then higher receive levels would be required and thus density of base stations and associated interference would increase. Yet the White Paper gives no indication that its assumption about receiver threshold bears any relationship to marketplace reality in a flexible use environment.

3. Misapplication of the COST-WI model.

The White Paper makes reference to the COST-WI model without fully acknowledging its limitations, which include a maximum base station height of 50 meters and the requirement that the base station height be much greater than roof heights in the coverage area.[18] Both of these limitations are ignored in the tables on page 6. Also, in some scenarios analyzed in Section 3 of the White Paper, the COST-WI model is used to assess configurations in which the coverage distance is less than the 20 meter minimum the model requires. Since there appears to be text missing between pages 5 and 6 of the White Paper, WaveRider cannot assess whether the authors commented on these material misapplications of the COST-WI model.

4. The dismissal of mobile LMS as a source of interference.

The White Paper's analysis focuses on the impact of LMS base station emissions on Part 15 devices in LMS coverage areas, and its conclusions as to the purported non-interference to Part 15 operations rely heavily on assumed base station antenna characteristics and the propagation losses between the base station and indoor Part 15 devices.[19] Without any analysis, however, the White Paper dismisses the impact of the LMS user devices on indoor Part 15 devices.[20] In addition, the analysis assumes that LMS user devices are portable and therefore of limited output power. This is a dubious commercial assumption in a flexible use environment, and thus potential deployment of fixed, higher power LMS user devices must be considered in the interference equation. LMS user devices, whether high or low power, are more likely than base stations to be located close to indoor Part 15 devices, and therefore are more likely to cause interference.

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[16] *See* n. 12 *supra.*

[17] *See* White Paper at 2-3.

[18] *See id.* at 5-6.

[19] *See id.* at 10-12.

[20] *See id.* at 14-15.

5. The interference scenarios in Section 3 of the White Paper are flawed.

Wireless Local Area Networks ("WLAN"). – The White Paper's analysis here is heavily predicated on base station antenna gain roll-off resulting from an assumed difference in height between the base station antenna and the WLAN system(s). Under that construct, however, the interference calculation produces a materially different result when one changes the base station antenna to a more practical one for point-to-multipoint LMS service (see discussion at page 5 *supra*), assuming use of an appropriate propagation model for the geometry shown at page 11, figure 2. In fact, given the reported credentials of the authors, it is surprising that such "parameter selection sensitivity" analyses were not included in the White Paper.[21]

Ricochet. While WaveRider cannot speak for Ricochet in this matter, the inclusion of Ricochet in the White Paper highlights the exclusion of WaveRider's networks from Progeny's technical analysis. Given WaveRider's market position and its active participation in this proceeding, Progeny's omission of WaveRider from the White Paper is puzzling. In any case, no meaningful assessment of the interference from LMS into WaveRider's networks is possible unless the analytical flaws discussed above are eliminated.

* * *

In sum, nothing in Progeny's filings should prompt the Commission to sacrifice the public interest benefits of license-exempt broadband service at 902-928 MHz solely to appease disgruntled LMS licensees. As observed by the Commission's Spectrum Policy Task Force, "a level of certainty regarding one's ability to continue to use spectrum, at least for some foreseeable period, is an essential prerequisite to investment and lead time."[22] For that reason, any doubts as to the ability of WaveRider's customers to use the 902-928 MHz band will bring deployment of broadband service in that spectrum to a halt, and thus would thwart the substantial investment-backed expectations of WaveRider and system operators across the country that use its equipment. Consumers, ultimately, would be disserved by that result.

[21] On this point, it is worth noting that WaveRider has considerable experience in helping license-exempt operators co-exist with other Part 15 users under the Commission's current rules. WaveRider has also cooperated and worked with developers of Part 15 devices (*e.g.*, meter reading and SCADA systems) to implement equipment enhancements that facilitate co-existence among Part 15 users in the 902-928 MHz band. Accordingly, WaveRider is well qualified to comment on the "real world" implications of what Progeny is attempting to do in this proceeding.

[22] Report of the Spectrum Policy Task Force, Federal Communications Commission, ET Docket No. 02-135, at 23 (Nov. 2002).

Should there be any questions concerning this submission, please contact the undersigned.

Very truly yours,

/s/
Robert D. Primosch
Counsel for WaveRider Communications, Inc.

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